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10/642,479	08/15/2003	Xiaodong Duan	AVA-P005	3852

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PATTERSON & SHERIDAN, LLP
3040 POST OAK BLVD
SUITE 1500
HOUSTON, TX 77056

EXAMINER	
CURS, NATHAN M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/642,479	Applicant(s) DUAN ET AL.	
	Examiner Nathan Curs	Art Unit 2613	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,8 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, 4 and 5 are objected to because of the following informalities:

In claim 1, line 8, "a spectrum in frequency domain" should be "a spectrum in the frequency domain".

In claim 4, line 2, "obtaining a spectrum in frequency domain" should be "obtaining a spectrum in the frequency domain".

In claim 5, lines 1-2, "computing the spectrum frequency domain" should be "computing the spectrum in the frequency domain".

Appropriate correction is required.

2. Claim 6 objected to because of the following informalities: claim 6 recites "sampling a plurality of points continuously at a frequency". In light of the amendment to claim 3, this language in claim 6 now establishes a third instance of sampling (the first being inherent to the A to D conversion, the second being the recited sampling of the digital signal in claim 3, and third is this further sampling). It appears the applicant intended to claim that the "sampling a plurality of points" from claim 3 is further limited in claim 6 to be "continuously at a frequency", rather than claiming a third instance of sampling. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

> invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. ("Shin") ("A novel optical signal-to-noise ratio monitoring technique for WDM networks", Shin et al.; Optical Fiber Communication Conference, 2000; Volume 2, 7-10 March 2000 Pages: 182-184) in view of Ames et al. ("Ames") (US Patent No. 6661817).

Regarding claim 1, Shin discloses a method of utilizing a performance monitor cell for distributed optical performance monitoring in a network (page 182, section "I. Introduction"), comprising: selecting a frequency range based on network traffic protocol and transmission rate (pages 182 section "I. Introduction" and first paragraph of section "II. Experiments", where using the FFT data in the range of 40 ~ 50 kHz for the 10Gbps pattern signal reads on selecting a frequency range based on network traffic protocol and transmission rate); tapping a portion of a signal in the network (fig. 1, element "OSNR monitor"); generating a spectrum in frequency domain utilizing a Fast Fourier Transform (page 182, first paragraph of section "II. Experiments"); generating a noise spectrum density from the spectrum and the frequency range (pages 182 and 183, section "II. Experiments", where noise spectrum density is determined from using the FFT in the range of 40 ~ 50 kHz); and calculating an optical signal noise ratio (OSNR) from the noise spectrum density and an average power, wherein the optical signal noise ratio is used to determine the performance of the network (pages 182 and 183, sections "I. Introduction" and "II. Experiments"). Shin discloses monitoring the average power of the tapped signal (fig. 1, photodiode in the top branch of the 1:1 splitter), and discloses A to D conversion for the FFT (fig. 1, element "AD Converter"), but does not disclose sampling a plurality of points from a digitized version of the tapped signal and then determining the average power from those plurality of points. Ames discloses monitoring optical power using a photodiode following by an current to voltage conversion followed by A to D conversion of the

voltage followed by sampling the digital voltage signal and calculating the average optical power using the sampled digital voltage (fig. 1 and col. 5, lines 32-50 and col. 6, lines 1-47). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the optical power detection method of Shin with the digital average optical power detection method of Ames, to provide the advantage of being able to store the calculated optical power values in memory for monitoring.

Regarding claim 2, the combination of Shin and Ames discloses the method of Claim 2, further comprising computing an average optical power from a pre-saved calibration table (Ames: col. 5, lines 32-50 and col. 6, lines 31-47, as applicable in the combination, where the optical power equation coefficients stored in memory indicate a pre-saved calibration table).

Regarding claim 3, Shin discloses a method of utilizing a performance monitor cell for distributed optical performance monitoring in a network (page 182, section "I. Introduction"), comprising: tapping a portion of a signal in the network (fig. 1, element "OSNR monitor"); calculating a noise spectrum density from a spectrum and a frequency range based on network traffic protocol and transmission rate (pages 182 and 183, section "II. Experiments", where using the FFT data in the range of 40 ~ 50 kHz for the 10Gbps pattern signal reads on selecting a frequency range based on network traffic protocol and transmission rate and where noise spectrum density is determined from using the FFT in the range of 40 ~ 50 kHz) and computing an optical signal noise ratio (OSNR) from the noise spectrum density and a predetermined calibration data, wherein the optical signal noise ratio is used to ascertain the performance of the network (pages 182 and 183, sections "I. Introduction" and "II. Experiments", where the known values for variables "optical bandwidth" and "resolution bandwidth" in the OSNR calculation read on predetermined calibration data). Shin discloses monitoring the average power of the tapped signal (fig. 1, photodiode in the top branch of the 1:1 splitter), and discloses

A to D conversion for the FFT (fig. 1, element "AD Converter"), but does not disclose sampling a plurality of points from a digitized version of the tapped signal. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Ames with Shin as described above for claim 1.

Regarding claim 4, the combination of Shin and Ames discloses the method of Claim 3, prior to the calculating step, further comprising computing a Fast Fourier Transform and obtaining a spectrum in frequency domain (Shin: pages 182 and 183, section "II. Experiments").

Regarding claim 5, the combination of Shin and Ames discloses the method of Claim 4, prior to the computing of the spectrum frequency domain, further comprising computing an average power of the plurality of points (Ames: fig. 1 and col. 5, lines 32-50 and col. 6, lines 1-47, as applicable in the combination).

Regarding claim 6, the combination of Shin and Ames discloses the method of Claim 5, prior to the computing step of the average power of the plurality of points, further comprising sampling a plurality of points continuously at a frequency (Ames: fig. 1 and col. 5, lines 32-50 and col. 6, lines 1-47, as applicable in the combination, where the sampling of the digital voltage signal for the optical power calculation happens continuously because "monitoring" of the optical power is inherently continuous).

Regarding claim 8, the combination of Shin and Ames discloses the method of Claim 3, wherein the computing of the OSNR is based on the following equation: OSNR = (P.sig * Bo)/(Pase * R) where the symbol "Psig" denotes a signal power, the symbol "Pase" denotes an Amplified Spontaneous Emission (ASE) power, the symbol "Bo" denotes a filter band width, and the symbol "R" denotes a wavelength resolution (Shin: page 183, specifically equation "(3)").

Regarding claim 15, Shin discloses a method of utilizing a performance monitor cell to monitor a channel in a multiplexer (page 182, section "I. Introduction"), comprising: tapping a

portion of a signal from the channel (fig. 1, element "OSNR monitor"); calculating a noise power density, wherein the noise power density is calculated by utilizing a spectrum in a frequency domain and a selected frequency range based on traffic protocol and transmission rate (pages 182 and 183, section "II. Experiments", where using the FFT data in the range of 40 ~ 50 kHz for the 10Gbps pattern signal reads on selecting a frequency range based on network traffic protocol and transmission rate and where noise spectrum density is determined from using the FFT in the range of 40 ~ 50 kHz); and determining an optical signal to noise ratio (OSNR) from the noise spectrum density and an average power, wherein the optical signal noise ratio is used to ascertain the performance of the multiplexer (pages 182 and 183, sections "I. Introduction" and "II. Experiments"). Shin discloses monitoring the average power of the tapped signal (fig. 1, photodiode in the top branch of the 1:1 splitter), and discloses A to D conversion for the FFT (fig. 1, element "AD Converter"), but does not disclose sampling a plurality of points from a digitized version of the tapped signal and then determining the average power from those plurality of points. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Ames with Shin as described above for claim 1.

Response to Arguments

5. Applicant's arguments filed 21 June 2007 have been fully considered and are persuasive with respect to Shin not disclosing converting a signal to digital and then sampling a plurality of points of the digital signal. Therefore, the 35 USC § 102 rejections based on Shin have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ames.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- US Patent No. 6433864 – The inventors of this patent are the same as the authors of the currently cited Shin reference, and this patent discloses similar information to the Shin reference.
- US Patent No. 6268943 – discloses optical SNR measuring for WDM using optical detection followed by A to D conversion and processing.

7. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pairdirect.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shi K Li

SHI K. LI
PRIMARY PATENT EXAMINER